

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-44. (Cancelled).

45. (Cancelled).

46. (Currently amended) The cable method according to Claim [[45]] 84, wherein said predetermined voltage class is not higher than 10 kV.

47. (Currently amended) The cable method according to Claim [[45]] 84, wherein said ~~voltage gradient is not smaller than 2.5 kV/mm and said impact is of at least 50 J energy.~~

48. (Currently amended) The cable method according to Claim 47, wherein said predetermined voltage class is between 10 kV and 60 kV.

49. (Currently amended) The cable method according to Claim [[45]] 84, wherein said ~~voltage gradient is not smaller than 2.5 kV/mm and said impact is of at least 70 J energy.~~

50. (Currently amended) The cable method according to Claim 49, wherein said predetermined voltage class is higher than 60 kV.
51. (Currently amended) The cable method according to Claim [[45]] 84, wherein said insulating layer thickness is at least 20% smaller than the insulating layer thickness provided for in IEC Standard 60502-2 (Ed. 1.1–1998-11) for the corresponding voltage class.
52. (Currently amended) The cable method according to Claim [[45]] 84, wherein said predetermined voltage class is 10KV and said insulating layer thickness is not higher than 2.5 mm.
53. (Currently amended) The cable method according to Claim [[45]] 84, wherein said predetermined voltage class is 20KV and said insulating layer thickness is not higher than 4 mm.
54. (Currently amended) The cable method according to Claim [[45]] 84, wherein said predetermined voltage class is 30KV and said insulating layer thickness is not higher than 5.5 mm.
55. (Currently amended) The cable method according to Claim [[45]] 84, wherein said conductor is a solid rod.

56. (Currently amended) The cable method according to Claim [[45]] 84, wherein the cable further including comprises an electric shield surrounding said insulating layer, said electric shield comprising a metal sheet shaped in tubular form.

57. (Currently amended) The cable method according to Claim [[45]] 84, wherein said insulating layer thickness is selected so that the electrical stress within the insulating layer when the cable is operated at a nominal voltage corresponding to said predetermined voltage class ranges among values between 2.5 and 18 kV/mm.

58. (Currently amended) The cable method according to Claim [[45]] 84, wherein said protective element is placed in a position radially external to said insulating layer.

59. (Currently amended) The cable method according to Claim [[45]] 84, wherein the degree of expansion of said expanded polymeric layer is between 0.35 and 0.7.

60. (Currently amended) The cable method according to Claim 59, wherein said degree of expansion is between 0.4 and 0.6.

61. (Currently amended) The cable method according to Claim [[45]] 84, wherein said expanded polymeric layer has a thickness between 1 and 5 mm.

62. (Currently amended) The cable method according to Claim [[45]] 84, wherein [[the]]
an expandable polymeric material of said expanded polymeric layer is selected from
polyolefin polymers or copolymers based on ethylene and/or propylene.

63. (Currently amended) The cable method according to Claim 62, wherein said
expanded polymeric material is selected from:

- a) ethylene copolymers with an ethylenically unsaturated ester in which
the quantity of unsaturated ester is between 5% and 80% by
weight,
- b) elastomeric copolymers of ethylene with at least one C₃-C₁₂ α-olefin,
and optionally a diene, having the following composition: 35%-90%
as moles of ethylene, 10%-65% as moles of α-olefin, 0%-10% as
moles of diene,
- c) copolymers of ethylene with at least one C₄-C₁₂ α-olefin, and optionally
a diene, having a density between 0.86 and 0.90 g/cm³, or
- d) polypropylene modified with ethylene/C₃-C₁₂ α-olefin copolymers where
the ratio by weight between polypropylene and the ethylene/C₃-C₁₂
α-olefin copolymer is between 90/10 and 30/70.

64. (Currently amended) The cable according to Claim [[45]] 84, wherein said
protective element further includes at least one non-expanded polymeric layer
coupled with said expanded polymeric layer.

65. (Currently amended) The cable method according to Claim 64, wherein said at least one non-expanded polymeric layer has a thickness in the range of 0.2 to 1 mm.
66. (Currently amended) The cable method according to Claim 64, wherein said at least one non-expanded polymeric layer is made of polyolefin material.
67. (Currently amended) The cable method according to Claim 64, wherein said protective element comprises a first non-expanded polymeric layer is in a position radially external to said expanded polymeric layer.
68. (Currently amended) The cable method according to Claim [[66]] 67, wherein said protective element comprises a second non-expanded polymeric layer in a position radially internal to said expanded polymeric layer.
69. (Currently amended) The cable method according to Claim [[45]] 84, comprising a further expanded polymeric layer in a position radially internal to said protective element.
70. (Currently amended) The cable method according to Claim 69, wherein said further expanded polymeric layer is in a position radially external to said insulating layer.
71. (Currently amended) The cable method according to Claim 69, wherein said further expanded polymeric layer is semiconductive.

72. (Currently amended) The cable method according to Claim 69, wherein said further expanded polymeric layer is water swellable.
73. (Currently amended) The cable method according to Claim [[45]] 84, wherein said conductor is a metal rod.
74. (Currently amended) The cable method according to Claim [[45]] 84, wherein said insulating layer is made of a non-crosslinked base polymeric material.
75. (Currently amended) The cable method according to Claim [[45]] 84, wherein said predetermined voltage class belongs to a medium or high voltage range.
76. (Currently amended) A cable for use in a predetermined voltage class, comprising:
The method according to Claim 84, wherein
~~a conductor;~~
~~an insulating layer surrounding said conductor; and~~
~~a protective element around said insulating layer comprising at least one expanded polymeric layer, the protective element thickness having~~
~~has a value smaller than 7.5 mm for a conductor cross-sectional area greater than 50 mm² and a value greater than 8.5 mm for a conductor cross-sectional area smaller than or equal to 50 mm².~~

77. (Currently amended) The cable method according to Claim [[76]] 84, wherein said predetermined voltage class is higher than 60 kV and said insulating layer is not detectably damaged upon impact of an energy of is at least 70 J.
78. (Currently amended) The cable method according to Claim [[76]] 84, wherein said predetermined voltage class is not higher than 60 kV and said insulating layer is not detectably damaged upon impact of an energy of is at least 50 J.
79. (Currently amended) The cable method according to Claim [[76]] 84, wherein said predetermined voltage class is not higher than 10 kV and said insulating layer is not detectably damaged upon impact of an energy of is at least 25 J.
80. (Cancelled).
81. (Cancelled).
82. (Cancelled).
83. (Currently amended) The group of cables method according to Claim [[81]] 84, wherein said expanded polymeric layer has constant thickness and said at least one non-expanded polymeric layer increases in thickness in inverse relationship with the conductor cross sectional area.

84. (Currently amended) A method for designing a cable comprising a conductor, an insulating layer surrounding said conductor and a protective element surrounding said conductor, said protective element including at least one polymeric expanded layer, comprising the steps of:

selecting a conductor cross-sectional area;

determining ~~the a~~ thickness for said insulating layer compatible with safe

operation in a predetermined voltage class on said selected conductor cross-sectional area ~~in correspondence of~~ based on one of a number plurality of predetermined electrical limit conditions and being smaller than the insulating layer thickness provided for in IEC Standard 60502-2 (Ed. 1.1–1998-11) for the corresponding voltage class;

said insulating layer thickness being such as to provide a voltage gradient on the outer surface of the insulating layer not smaller than 1.0 kV/mm;

~~selecting the maximum insulating layer thickness among those determined in said number of predetermined electrical limit conditions;~~

determining a thickness of said protective element so that said insulating layer is not detectably damaged upon an impact on the cable by an energy of at least 50 25 J; and

using said selected insulating layer and said determined protective element thickness in the design of [[a]] the cable for said

predetermined voltage class and selected conductor cross-sectional area.

85. (Previously presented) The method according to Claim 84, wherein said step of determining a thickness of said protective element comprises the step of determining a thickness of said expanded polymeric layer.
86. (Previously presented) The method according to Claim 84, wherein said step of determining a thickness of said protective element comprises the step of selecting a thickness of said expanded polymeric layer and determining a thickness of at least one non-expanded polymeric layer associated with said expanded polymeric layer, said protective element comprising said at least one non-expanded polymeric layer.
87. (Previously presented) The method according to Claim 86, wherein said step of determining a thickness of at least one non-expanded polymeric layer comprises the step of correlating in inverse relationship the thickness of said at least one non-expanded polymeric layer with the conductor cross-sectional area.
88. (Previously presented) The method according to Claim 86, wherein said predetermined electrical limit conditions include the electric gradient at the outer surface of the insulating layer.